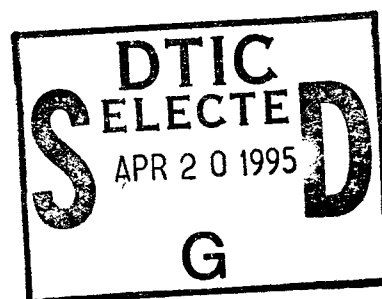
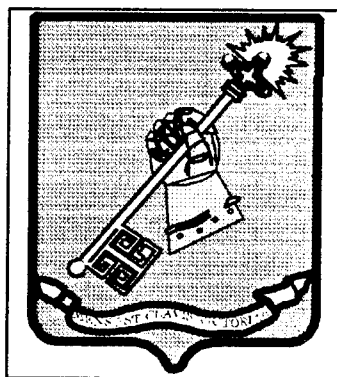


# **CHALLENGING THE HEAVY BRIGADE DIRECT SUPPORT ARTILLERY PARADIGM FOR BRIGADE CLOSE FIGHT**

**A Monograph  
by**

**Major Allen W. Batschelet  
Field Artilley**



**School of Advanced Military Studies  
United States Army Command and General Staff College  
Fort Leavenworth, Kansas**

**First Term AY 94-95**

**Approved for Public Release; Distribution is Unlimited**

**19950419 050**

**DTIC QUALITY INSPECTED 8**

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE 19 12/ 94	3. REPORT TYPE AND DATES COVERED MONOGRAPH		
4. TITLE AND SUBTITLE Challenging the Heavy Brigade Direct Support Artillery Paradigm for the Brigades <sup>case</sup> Fight		5. FUNDING NUMBERS		
6. AUTHOR(S) MAJ Allen W. Batschelet USA		8. PERFORMING ORGANIZATION REPORT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) School of Advanced Military Studies Attn: ATZL-SW Ft. Leavenworth, KS 66027-6900 CORA 913-684-3437 Autovon 552-3437		10. SPONSORING/MONITORING AGENCY REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		11. SUPPLEMENTARY NOTES		
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for release; Distribution Unlimited		12b. DISTRIBUTION CODE		
13. ABSTRACT (Maximum 200 words)  see attached				
14. SUBJECT TERMS Direct Support Artillery, Heavy Brigade, Fire Support, Doctrine, Training, Organization, Leader Development			15. NUMBER OF PAGES 52	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT unclassified	20. LIMITATION OF ABSTRACT unlimited	

## GENERAL INSTRUCTIONS FOR COMPLETING SF 298

The Report Documentation Page (RDP) is used in announcing and cataloging reports. It is important that this information be consistent with the rest of the report, particularly the cover and title page. Instructions for filling in each block of the form follow. It is important to **stay within the lines** to meet **optical scanning requirements**.

**Block 1. Agency Use Only (Leave blank).**

**Block 2. Report Date.** Full publication date including day, month, and year, if available (e.g. 1 Jan 88). Must cite at least the year.

**Block 3. Type of Report and Dates Covered.** State whether report is interim, final, etc. If applicable, enter inclusive report dates (e.g. 10 Jun 87 - 30 Jun 88).

**Block 4. Title and Subtitle.** A title is taken from the part of the report that provides the most meaningful and complete information. When a report is prepared in more than one volume, repeat the primary title, add volume number, and include subtitle for the specific volume. On classified documents enter the title classification in parentheses.

**Block 5. Funding Numbers.** To include contract and grant numbers; may include program element number(s), project number(s), task number(s), and work unit number(s). Use the following labels:

<b>C</b> - Contract	<b>PR</b> - Project
<b>G</b> - Grant	<b>TA</b> - Task
<b>PE</b> - Program Element	<b>WU</b> - Work Unit Accession No.

**Block 6. Author(s).** Name(s) of person(s) responsible for writing the report, performing the research, or credited with the content of the report. If editor or compiler, this should follow the name(s).

**Block 7. Performing Organization Name(s) and Address(es).** Self-explanatory.

**Block 8. Performing Organization Report Number.** Enter the unique alphanumeric report number(s) assigned by the organization performing the report.

**Block 9. Sponsoring/Monitoring Agency Name(s) and Address(es).** Self-explanatory.

**Block 10. Sponsoring/Monitoring Agency Report Number.** (If known)

**Block 11. Supplementary Notes.** Enter information not included elsewhere such as: Prepared in cooperation with...; Trans. of...; To be published in.... When a report is revised, include a statement whether the new report supersedes or supplements the older report.

**Block 12a. Distribution/Availability Statement.** Denotes public availability or limitations. Cite any availability to the public. Enter additional limitations or special markings in all capitals (e.g. NOFORN, REL, ITAR).

**DOD** - See DoDD 5230.24, "Distribution Statements on Technical Documents."

**DOE** - See authorities.

**NASA** - See Handbook NHB 2200.2.

**NTIS** - Leave blank.

**Block 12b. Distribution Code.**

**DOD** - Leave blank.

**DOE** - Enter DOE distribution categories from the Standard Distribution for Unclassified Scientific and Technical Reports.

**NASA** - Leave blank.

**NTIS** - Leave blank.

**Block 13. Abstract.** Include a brief (*Maximum 200 words*) factual summary of the most significant information contained in the report.

**Block 14. Subject Terms.** Keywords or phrases identifying major subjects in the report.

**Block 15. Number of Pages.** Enter the total number of pages.

**Block 16. Price Code.** Enter appropriate price code (*NTIS only*).

**Blocks 17. - 19. Security Classifications.** Self-explanatory. Enter U.S. Security Classification in accordance with U.S. Security Regulations (i.e., UNCLASSIFIED). If form contains classified information, stamp classification on the top and bottom of the page.

**Block 20. Limitation of Abstract.** This block must be completed to assign a limitation to the abstract. Enter either UL (unlimited) or SAR (same as report). An entry in this block is necessary if the abstract is to be limited. If blank, the abstract is assumed to be unlimited.

SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

Major Allen W. Batschelet

Title of Monograph: Challenging the Heavy Brigade Direct Support  
Artillery Paradigm for the Brigade Close  
Fight

Approved by:

Richard M. Swain Monograph Director  
Richard M. Swain, Ph.D.

Gregory Fontenot Director, School of  
COL Gregory Fontenot, MA, MMAS Advanced Military  
Studies

Philip J. Brookes Director, Graduate  
Philip J. Brookes, Ph.D. Degree Program

Accepted this 17th day of December 1994

## ABSTRACT

CHALLENGING THE HEAVY BRIGADE DIRECT SUPPORT ARTILLERY  
PARADIGM FOR THE BRIGADE CLOSE FIGHT by MAJ Allen W.  
Batschelet, USA, 46 pages

This study examines how successful the current heavy brigade fire support system is in facilitating the integration of close support indirect fires with maneuver. The research shows that the supply and demand sides of the current heavy brigade fire support system have many inherent weaknesses that inhibit the integration of indirect fires with maneuver.

The major weakness of the system is found on the demand side. Institutional training of maneuver officers is not producing combined arms officers. Additionally, artillerymen are not being trained to understand maneuver doctrine or how to integrate effectively indirect fires with maneuver. Other weaknesses include, doctrinal-organizational disconnects and reality-doctrinal mismatches.

Analysis of the system includes an examination of National Training Center heavy brigade rotations from 90-1 through 94-07. Additional research material consisted of an examination of the institutional training received by armor, infantry, and artillery officers. The heavy brigade fire support system was examined against the definition of close support fires, likely force projection battlefield environment, and types of indirect fires required by the heavy brigade in the expected environment.

Accession For	
NTIS	CRA&I <input checked="checked" type="checkbox"/>
DTIC	TAB <input type="checkbox"/>
Unannounced <input type="checkbox"/>	
Justification _____	
By _____	
Distribution / _____	
Availability Codes	
Dist	Avail and/or Special
A-1	

# TABLE OF CONTENTS

	<u>Page</u>
APPROVAL PAGE . . . . .	ii
ABSTRACT . . . . .	iii
SECTION	
1. INTRODUCTION . . . . .	1
A. SIGNIFICANCE OF THE PROBLEM . . . . .	3
B. ENVIRONMENT OF THE CLOSE BATTLE . . . . .	5
C. DOCTRINAL PURPOSE OF CLOSE SUPPORT INDIRECT FIRES . . . . .	12
C. HEAVY BRIGADE FIRE SUPPORT SYSTEM . . . . .	15
2. EVALUATION OF CURRENT HEAVY BRIGADE FIRE SUPPORT SYSTEM . . . . .	17
A. SUPPLY SIDE . . . . .	17
1. TARGET ACQUISITION SYSTEM . . . . .	17
2. DELIVERY SYSTEM . . . . .	23
3. COMMAND AND CONTROL . . . . .	25
B. DEMAND SIDE . . . . .	32
3. CONCLUSION AND RECOMMENDATIONS . . . . .	36
ENDNOTES . . . . .	41
BIBLIOGRAPHY . . . . .	45
APPENDIXES	
A. DUTY DESCRIPTIONS OF CRITICAL INDIRECT FIRE SUPPORT SYSTEM PERSONNEL . . . . .	A-1
B. HEAVY BRIGADE FIRE SUPPORT SYSTEM . . . . .	B-1
C. PROPOSED HEAVY BRIGADE FIRE SUPPORT SYSTEM STRUCTURE . . . . .	C-1
INITIAL DISTRIBUTION LIST . . . . .	52

## INTRODUCTION

### Background

Integration of indirect fires with maneuver, and achievement of massed weapons effects at the decisive place and time, is the major challenge faced by the heavy brigade combined arms commander. Success in combat for the commander of a heavy brigade depends on his ability to synchronize combat power, primarily indirect fires, with maneuver of direct fire elements. This goal of integrating indirect fires with maneuver has proven elusive and difficult to attain under the present fire support system.

The current doctrinal requirement placed on the fire support system aims to optimize the employment of fire support by integrating close support indirect fires with the maneuver plan.<sup>1</sup> Heavy brigades rarely achieve the integration goal despite the fire support system's existing organization, institutional training, doctrine, and derivative tactics, techniques and procedures. Heavy brigades training at the combat training centers repeatedly display a failure to integrate close support indirect fires with maneuver.

According to BG Carter, when Commanding General of the National Training Center (NTC):

"The issue at the NTC is not field artillery, it's fire support--the full integration of maneuver with fires. ...Field Artillery is exceptionally good at sending rounds downrange and hitting the right point on the ground. The piece we don't do well is to put rounds on a specific target at exactly the right time and event in the battle."<sup>2</sup>

Currently the indirect fire support system consists of three parts: fire support command, control, and coordination; target acquisition and battlefield surveillance; and fire support resources . . . weapons and munitions.<sup>3</sup> Three doctrinal principles provide the operational foundation for the fire support system. First, the fire support system must operate as one force. This means that all fire support assets must function with a unity of effort and purpose. Second, the fire support system must be responsive to the needs of the force commander. This principle is the basis for the design of the fire support system. Third, direction of the fire support system is the responsibility of the field artillery commander.<sup>4</sup>

The heavy brigade indirect fire support system has two sides, a demand side, and a supply side. This study will examine both sides of the system. On the demand side of the equation, the combined arms commander expresses his intent for indirect fire support. The supply side of the system translates the commander's intent into a concept for indirect fires. It does this by deciding which targets to



attack, detecting those targets, and attacking them where and when the combined arms commander intends.<sup>5</sup>

The current heavy brigade fire support system appears incapable of meeting the goal of integrating indirect fires with maneuver. Maneuver commanders and fire supporters must ask if altering the current heavy brigade fire support system would improve the combined arms commander's ability to integrate supporting fires with maneuver. This study will examine the heavy brigade indirect fire support system and identify potential weaknesses. It will also suggest potential solutions for the improvement of the combined arms commander's ability to integrate indirect artillery fires with maneuver.

Examination will include evaluation of the demand and supply side of the current heavy brigade indirect fire support system. Criteria used for analysis, based on a definition of success, will include doctrine, organization, leader development, and training. Analysis of both sides of the system using these standards will determine the factors that inhibit the current fire support system. Identification of such factors will lead to proposed solutions for the improvement of the heavy brigade fire support system.

#### Significance of the Problem

Heavy brigade commanders are responsible for fighting and winning the close battle within a battlefield framework of close, deep, and rear operations.<sup>6</sup> FM 100-5,

Operations, defines the close fight as the decisive element of the three types of operations:

Close operations are usually the corps and division current battles. At the tactical level, they include the engagements fought by brigades and battalions. Commanders should dictate when and where to fight decisive close battles. Only ground forces can dominate the terrain through close operations. No other means are capable of doing this. Normally it takes close operations on land to gain decisive and lasting battlefield effects. Close operations by ground forces give commanders staying power.<sup>7</sup>

In support of close operations, the heavy brigade's indirect fire support system provides three types of fires. These are, close support to direct combat units, counterfires, and interdiction fires.<sup>8</sup> Employment of each type of fires places unique and competing demands on the fire support system. Successful counterfires, and interdiction fires designed to delay, disrupt, or limit the enemy, require that targets be engaged with accurate and massive fires. Timely delivery of these type fires is less important than achieving massed effects.<sup>9</sup> Alternately, close support fires, designed to suppress hostile enemy targets, place a premium on responsiveness versus the ability to mass. These conflicting demands force the fire support system to balance the ability to provide responsive fires with the requirement to deliver massed fires.

Achieving effective command and control of responsive and massed fires requires varying degrees of centralization dependent on the type of fires required. Centralized command and control increases the fire support system's ability to provide massed fires, while

decentralization enhances speed of response. Competition between the dual requirements to mass and provide responsive fires, combined with the need to make efficient use of limited indirect fire support assets, demands that the fire support system meet both criteria simultaneously. This dilemma is unlikely to change.

### Environment of the Close Battle

What kind of battlefield environment must the Army prepare for? Missions that the Army is likely to face in the future encompass the entire spectrum of conflict, from high-intensity conflict to operations other than war. While the ability to execute counterfires and interdiction will continue to be necessary to win in a sustained mid-to-high intensity conflict, the ability of the fire support system to provide effective close support fires will increase in importance. In an era of a force projection army, a deployed heavy brigade is likely to place more emphasis on responsiveness of fires, intended to suppress rather than destroy enemy forces, because it will deploy without many of the support assets normally provided by higher echelons. Therefore, the fire support system must provide for the effective integration of the three types of indirect fires with the combined arms brigade commander's scheme for maneuver.

As evidenced by the U.S. Army's experience in Operation Desert Storm and at the combat training centers, and as envisioned by FM 100-5, the next high-intensity war

will be unprecedented in scope and lethality. More than ever before, longer range, increased accuracy, and more mobility, characterizes modern weapons. Concurrently, the Army's ability to acquire information and targets extends throughout the breadth and depth of the battle field. Deep, close, and rear operations, conducted simultaneously, will increase the tempo and characterize battle at every echelon of command.<sup>10</sup>

Terrain on which combat occurs will continue to define future conflict. Traditional areas of restricted terrain will limit the line of sight of modern, long range direct fire weapons, and restrict the mobility, communications, and line-of-sight target acquisition capabilities of combat forces. Alternately, geographical areas such as Southwest Asia and the Middle East will allow forces to capitalize on modern weapon designs. Weapon systems of increasing lethality that include improved conventional, nuclear, biological, and chemical weapons, will allow commanders to focus overwhelming combat power at the decisive place and time in the close fight. This combination of elements defines a battlefield where the tide of combat could change in minutes. Heavy brigades must train to respond quickly to unexpected situations and be prepared to fight independently as an initial entry force if they expect to win in this environment.

This environment, wedded to a force projection army, creates unique problems for a heavy brigade. Current U.S. Army doctrine for offensive and defensive operations, calls

for the simultaneous attack of the enemy in depth and width. During defensive operations, the brigade commander focuses on the close fight and expects the corps and division to interdict the enemy before they arrive in front of the brigade.<sup>11</sup>

Corps deep operations, employing attack aviation and indirect fires, attempt to effect the coherence of the enemy's command and control, logistics, reserves, or follow on second echelons.<sup>12</sup> Division deep operations intend to disrupt, delay, and limit forces attempting to engage the brigade in the close fight.<sup>13</sup> The corps and division artillery's role in deep operations is to execute counterfires and interdiction fires. Additionally, they will support deep attacks by aviation forces through the execution of suppression of enemy air defenses (SEAD), missions. Counterfire missions will target enemy indirect weapon systems attacking the brigade. Inevitably, some enemy forces will close on the brigade.

As enemy forces approach the brigade, combat observation lasing teams, scouts, and fire support teams, will execute fire plans and engage targets of opportunity in an attempt to create favorable conditions for winning the direct fire fight.<sup>14</sup> As the enemy continues to close with the brigade, indirect fires will have less effect proportionally as direct fire engagements begin. Some friendly units will defeat attacking forces, others will reposition, and still others will be bypassed in their positions.

Offensive operations will look much like defensive operations. In the hasty or deliberate attack, brigade commanders will depend on corps and division elements to create the conditions necessary for the attack to succeed. Corps and division deep operations will target enemy command, control, and communication assets and other high payoff targets, including indirect fire units. These fires will disrupt the enemy's ability to employ counterattack forces, reserves, and establish an effective resupply system.<sup>15</sup>

The corps and division artillery's missions in the attack are similar to those executed in the defense. Corps and division counterfires and preparation fires will attempt to disrupt the enemy's ability to employ indirect fires against attacking direct fire platforms. They will also provide suppression of enemy air defense fires for deep exploitation missions conducted by aviation units.<sup>16</sup>

As the brigade closes within direct fire range of the enemy's positions, company fire support teams, combat observation lasing teams and battalion fire support officers will begin the execution of preplanned fires. These fires include obscuration, suppressive, and precision munitions fires like Copperhead.<sup>17</sup> Hasty and deliberate attacks will have similar characteristics, while meeting engagements will differ in that close support fires will consist mostly of targets of opportunity. To achieve success, heavy brigades in a force projection army must train to execute both offensive and defensive missions.

Force projection operations will be defensive in nature initially as forces establish lodgements and begin buildup. In this environment, brigade commanders may not have the doctrinal support of division or corps deep attack assets. Without the ability to shape the deep fight with deep strike weapons, the deployed brigade must concentrate its indirect fire resources on the close fight and provide close support fires to units in contact. Two examples demonstrate the likely battlefield environment and type of indirect fires required by heavy brigades in those circumstances.

First, the deployment in early October, 1994 of a heavy brigade from the 24th Infantry Division, to Southwest Asia, provides a recent example of the probable future operations environment. In response to the aggressive movement of Iraqi Republican Guard Divisions toward the Kuwaiti border, President Clinton ordered the 24th Mech to deploy to Saudi Arabia and Kuwait. The initial brigade arrived in Saudi Arabia without its heavy equipment. A prepositioned brigade set of equipment in Camp Doha, north of Kuwait City, constituted the entirety of heavy weapons available to the brigade.

This heavy brigade was the only U.S. ground tactical level unit in theatre. Strategic and operational level forces were present in the region in the form of U.S. Navy aircraft carrier battle groups, Air Force fighter aircraft, and strategic bombers that could reach the area. Additional equipment sent to the region consisted of Army equipment

configured for heavy brigades, prepositioned afloat on cargo ships. This equipment was not available for use by a subsequently deployed brigade of the 24th Mech Division for a minimum of two weeks after the units arrival. This combination of circumstances put the theatre and heavy brigade commander in a precarious situation.

A lack of tactical level deep strike weapons created a doctrinal dilemma. The commander of the initial entry heavy brigade had to develop a defensive plan designed to defeat an armored threat without the doctrinally required support that corps and division would normally provide. This situation increased the importance of close support indirect fires. While limited close air support assets were available, most of the theatre air assets were strategic in nature. These weapons could attack critical targets throughout Iraq with phenomenal precision, but were less able to create the conditions for the successful execution of the brigade close fight. Operations and circumstances like that described above, will typify most of the missions undertaken in the future by contingency deployed heavy brigades.

A second example is provided by the engagements fought by the 2nd Brigade, 1st Cavalry Division, during the period 15 to 24 February 1991. The Blackjack Brigade and its direct support artillery, the 3-82 Field Artillery Battalion executed a series of cross border, limited attacks, and raids subordinate to, but relatively independent of Division and Corps operations. These



operations took place in the Wadi al Batin at the confluence of the Iraq, Kuwait, and Saudi Arabian borders.

The 3-82 FA fired over forty missions and 3500 rounds of ammunition including, smoke, high explosive, dual-purpose improved conventional munitions (DPICM), and Copperhead in support of the Blackjack Brigade. All of the missions executed were close support missions that impacted within 1000 to 4000 meters of direct combat units. Employment of smoke munitions, designed to screen movement by maneuver elements and obscure the vision of Iraqi forces, constituted one-fourth of all missions fired. Precision fires, in the form of Copperhead munitions, attacked critical enemy command and control systems. DPICM and high explosive fires continually suppressed the enemy armored vehicles and trench lines.<sup>18</sup>

A platoon from the Division Artillery's Multiple Launch Rocket System, linked to a counter battery Firefinder radar (Q37), and under the control of the division commander, had the mission to conduct counterfire operations. The direct support battalion did not execute any counterfires or interdiction fires. The MLRS unit executed limited counterfires and no interdiction fires.<sup>19</sup>

The brigade commander's intent for indirect fires in these engagements was to allow the direct combat units to retain their freedom of maneuver.<sup>20</sup> Indirect fires were to create the conditions for successful attack of the enemy by direct fires. In this example, the combined arms commander's intent for close support indirect fires is

instructive. While indirect fire is a major killer on the battlefield, in the close support role, its main contribution is to restrict enemy fires, obstruct enemy observation, and attack key targets with precision munitions. Accomplishment of these tasks allowed the maneuver elements to close with and destroy the enemy.

To this point the study has described the heavy brigade battlefield environment. Additionally, it has identified the types of indirect fires the brigade will need in that environment. The next step is to determine the current doctrinal purpose for close support indirect fires.

#### Doctrinal Purpose of Close Support Indirect Fires

The classic role of indirect fires is to provide close support to the maneuver force. This description is simplistic and does not define adequately the term "close support fires" for the purpose of this study. FM 71-3, Armored and Mechanized Infantry Brigade, emphasizes weighting the main attack, or effort, for offensive and defensive operations, as the primary consideration for the fire support system at brigade level.<sup>21</sup> The type missions envisioned, include preparation fires, final protective fires, suppressive fires, and obscuration fires. Other requirements discussed include the execution of counterfires and suppression of enemy air defense fires.

Fire supporters must understand and incorporate into doctrine the effects a combined arms commander expects from

indirect fires if the fire support system is to meet the commander's expectations. FM 6-20, Fire Support in the AirLand Battle, and FM 6-20-40, Fire Support for Brigade Operations (Heavy), emphasize not only weighting the main attack or effort, but also the responsiveness of indirect fires for close operations.<sup>22</sup> This characterization of close support is more refined and leads to a better understanding of the role of indirect fires in close support operations.

This study will use the definition of close support fires, found in FM 6-20, Fire Support in the AirLand Battle:

"Close Support fires are used to engage enemy troops, weapons, or positions that are threatening or can threaten the force in either the attack or the defense. They allow the commander to rapidly multiply combat power effects and shift fires quickly about the battlefield. Close support expands battlefield depth, erodes enemy forces, and inflicts damage well beyond direct-fire ranges."<sup>23</sup>

This definition provides the measure of success used to examine how successful the current heavy brigade fire support system is in terms of doctrine, organization, leader development, and training. Fire supporters and maneuver commanders must have a thorough understanding of the inherent requirements found in the definition of close support to effectively design a system that can successfully integrate indirect fires with maneuver.

To this point the study has established the likely combat environment for the heavy brigade, defined close support, and identified the doctrinal requirements and

purpose of the heavy brigade indirect fire support system. The next section will describe the current heavy brigade indirect fire support system. Additionally, it will identify the primary tool used by the combined arms commander and his fire support coordinator to ensure the integration of indirect fires with the scheme of maneuver.

#### Heavy Brigade Fire Support System

The fire support system for the heavy brigade is a two sided system that may be divided into a demand side and a supply side. The supply side is a triad that consists of, target acquisition assets, delivery systems, and command and control elements.<sup>24</sup> Target acquisition assets are the target producers and executors for the heavy brigade. At brigade level they include brigade fire support officers, and combat observation lasing teams. Battalions have a fire support officer and fire support element. Company level assets include company fire support teams, platoon forward observers, and front line troops.

Depending on the brigade mission and availability or presence of divisional assets, the division artillery may supplement these line-of-sight assets with a Counter Mortar FireFinder Radar (Q-36). Assets allocated by division may include unmanned aerial vehicles, and other intelligence and electronic warfare equipment.<sup>25</sup>

Delivery systems include both lethal and non-lethal weapons. A heavy brigade will normally have its battalion's organic mortars and the fires of a direct support artillery

battalion. Again, dependent on the mission, additional support from division may include close air support, and naval gunfire support.<sup>26</sup>

The fire support system, consisting of organizations and procedures, is designed to provide command and control of the direct support artillery battalion and integrate indirect fires with maneuver. The direct support artillery battalion commander functions as the brigade commander's fire support coordinator. Other key personnel include brigade and battalion fire support officers, and the artillery battalion's fire direction, and operations officers.<sup>27</sup> (See Appendix A for a description of doctrinal duties for each position and Appendix B for a diagram of the heavy brigade fire support system).

Fire support planning determines how fire support assets will be used, what types of targets to attack, when to attack, and with what means. The goal is to effectively integrate fire support into battle plans and optimize combat power. The heavy brigade fire support system uses a decide, detect, deliver, methodology designed to integrate indirect fires with the scheme of maneuver.<sup>28</sup> Fire support planning is a continuous top-down process of analyzing, allocating, and scheduling fire support.

Development of fire plans uses a formal top-down process, with bottom-up refinement as time permits. Brigade is normally the lowest level at which formal fire planning is done. The brigade fire support officer receives targets that are in his zone and in the brigade area of interest

from the division. These targets are added to the brigade's target list and passed to the battalion fire support officers and direct support artillery battalion. The brigade fire support officer then receives target list modifications from the battalion fire support officers, who have received target refinements from the company fire support teams, resolves duplications, prioritizes the list, and sends it to the appropriate agencies.<sup>29</sup>

Plans must be flexible to adapt to the unexpected in combat and facilitate rapid changes in the plan. Fire support plans anticipate the massing of fire support assets, changes in the force mission, realistic movement times, resupply, target acquisition, and technical support. In fire support planning, the fire support officer must be guided by the combined arms commander's intent and scheme of maneuver.<sup>30</sup>

Understanding and executing the combined arms commander's intent is the basis for the fire support system's emphasis on maximum feasible centralized control and decentralized execution. This principle is significant in that it allows for the rapid response to unanticipated situations. The fire support system's dilemma is to reconcile the ability to mass, through centralized control, and its ability to react to changing requirements using decentralized execution. Therefore, a common understanding of the combined arm's commander's intent by everyone involved with the fire support system is critical to the successful integration of indirect fires with maneuver. The

next section will evaluate the current heavy brigade fire support system and attempt to identify weaknesses that inhibit the system's ability to provide close support fires and integrate indirect fires with maneuver.

#### Evaluation of Current Heavy Brigade Fire Support System

This section evaluates the current heavy brigade fire support system and its ability to integrate indirect fires with maneuver. Evaluation relies principally on an analysis of seventy-five force-on-force battalion/task force missions, and twenty-five brigade operations at the National Training Center (NTC). The period examined extends from rotation 90-1 through rotation 94-7. Additional evidence is drawn from formal studies conducted by RAND Corporation, doctrinal manuals, and informal "White Papers" commissioned by Fort Sill. Analysis will focus on four areas: doctrine, training, leader development, and organization as they relate to the supply and demand side of the heavy brigade indirect fire support system. Examination begins with the supply side of the system and only addresses the elements identified as weaknesses.

#### Heavy Brigade Fire Support System, Supply Side

##### Target Acquisition System

Acquisition and attack of targets, when and how the combined arms commander intends, are critical to the achievement of successful integration of close support indirect fires with maneuver:

"If the maneuver commander and his FSCoord are unsure of where they are delivering indirect fires or on what they are delivering those fires, the best and most practiced TTP (tactics, techniques, procedures), are likely to be ineffective."<sup>31</sup>

To prevent this situation from occurring, the Field Artillery School chartered a series of studies entitled, Close Support Study Group (CSSG) II (1979), CSSG III (1984), and CSSG IV (1989).<sup>32</sup> The studies found that combat observation lasing teams, instead of forward observers, were required to achieve accurate location of targets and successfully use laser guided precision munitions. CSSG IV recommended the elimination of infantry company forward observers to make force structure positions available for the fielding of nine combat observation lasing teams for each heavy brigade.

Infantry company forward observers contribute little to the success of the heavy brigade fight. Forward observers lack the tools required for successful engagement of indirect fire targets, they do not have position determination equipment, or the ground/vehicular laser locator designator (G/VLLD), used by combat observation lasing teams. Analysis of the NTC Take Home Packages was unable to determine the number of indirect fire missions initiated by company forward observers. However, a recent study by RAND learned that company forward observers were: ". . . generally underutilized and initiated only a small percentage of indirect fire missions." Additionally, the study recommended conversion of company forward observers to



combat observation lasing teams and provided with the appropriate equipment.<sup>33</sup>

In response to these recommended changes direct support artillery battalion Tables of Organization and Allowances, authorize six combat observation lasing teams for each heavy brigade. Due in part to the lack of M981 fire support team vehicles (a variant of the M113 series armored vehicle), actual combat observation lasing team fielding varies from one to three systems for each heavy brigade.<sup>34</sup> Not fielding combat observation lasing teams in the recommended or authorized numbers has created an organizational-doctrinal disconnect in the heavy brigade indirect fire support system.

FM 71-3 says that the brigade commander sets the terms of the direct fire battle by conducting operations in depth.<sup>35</sup> Brigade deep operations open opportunities for decisive action by reducing the enemy's closure rate and creating periods of friendly superiority to gain or retain the initiative. The lethal tools used to attack the enemy in depth consist of indirect fires.<sup>36</sup> Effective deep fires depend on acquisition, continued observation, and correctly timed attack of targets. Combat observation lasing teams are the tools used by the brigade combined arms commander to execute attack of brigade deep targets. However, current observer organization concentrates most of the "eyes," fire support teams and forward observers, at subordinate echelons.

All fire support system observers, except the combat observation lasing teams, are doctrinally and organizationally employed at the company and battalion levels. This is doctrinally and organizationally inconsistent with the requirement for the brigade combined arms commander to fight the deep fight with centralized control of indirect fires. Direct fire engagements characterize the fight at the company level and as previously demonstrated, forward observers, due to their location on the battlefield, contribute little once direct fire engagements begin. Without sufficient brigade combat observation lasing teams needed to execute an effective brigade deep fight, the task falls to battalion scouts or other maneuver elements as an additional task. This is a mission that battalion scouts and maneuver forces do not have the equipment or training to perform.

An example that typifies a battalion scout's attempt to execute the brigade deep fight occurred at the NTC during rotation 93-09 in a brigade defense in sector mission. Battalion scouts had the responsibility to execute a critical indirect fire target, designed to deny the enemy observation of friendly unit dispositions, a task determined previously to be a main requirement of close support fires. The after action review commented that:

"Scout OPs tracked the enemy recon entering sector. The platoon leader called the counter-recon co/tm FSO to get artillery on the enemy."<sup>37</sup>

Even with "eyes" on target, the scouts were unable to attack the enemy with indirect fires. They did not

possess the necessary equipment, position determination or G/VLLD, to track the enemy or trigger the indirect fire attack. Due to his location, the counter-recon co/tm fire support officer could not observe the target, which resulted in an ineffective indirect fire engagement. In this situation the one brigade combat observation lasing team had the task to observe a different brigade target area of interest, determined to be critical to the brigade fight. When the situation changed and the enemy appeared in an unexpected area, the brigade commander did not possess the assets or have the control needed to respond.<sup>38</sup>

Scouts gather and report information.<sup>39</sup> It is unrealistic to expect scouts, under control of the battalion level commanders, to execute brigade planned indirect fires and perform their primary function. These tasks require different forms of tactical movement and observation position selection and will often conflict.

Another example, taken from NTC rotation 94-07, demonstrates the effectiveness of doctrinally employed combat observation lasing teams. The brigade commander developed his intent to execute the brigade deep fight for a deliberate attack that hinged on the brigade's combat observation lasing teams. For this brigade mission the two brigade combat observation lasing sections occupied observation positions along the forward line of troops. One section had the task to attack an enemy combat outpost with precision Copperhead munitions five minutes before the brigade crossed the line of departure. The other combat

observation lasing section triggered and shifted suppressive indirect fires on the enemy company chosen by the combined arms commander as the focal point for the attack. Both combat observations lasing teams were under the centralized control of the brigade fire support officer.<sup>40</sup>

In this situation battalion fire support officers and company fire support teams had responsibility to execute obscuration fires as the brigade advanced. Under brigade control, the combat observation lasing teams moved into overwatch positions selected by the brigade fire support officer and executed their tasks despite a change in time to cross the line of departure. Centralized brigade control allowed the commander to alter his plan with little disruption. Moreover, the commander did not have to rely on a subordinate commander to supervise the emplacement of the combat observation lasing teams and their execution of tasks critical to the brigade attack. Battalion fire support officers were free to execute obscuration fires and attack targets of opportunity, while the scouts were free to concentrate on their doctrinal mission.<sup>41</sup> These missions, typical of those analyzed, reinforce the earlier findings of this study regarding the most likely types of indirect fires required for the close support of the brigade's maneuver elements.

Without a reorganization of the current heavy brigade indirect fire support target acquisition structure, success of the brigade deep fight will depend on the ability of maneuver forces to execute indirect fire tasks as an

additional duty. The current heavy brigade indirect fire support structure concentrates most observers at the least effective echelon and position on the battlefield, company and battalion. Until adjustment of the indirect fire support observer organization reflects doctrine, the brigade combined arms commander will remain constrained in his ability to integrate successfully close support indirect fires with maneuver.

#### Delivery System

Responsiveness of indirect fires in the brigade close battle is the key to success.<sup>42</sup> Evidence shows that the delivery system is not responsive in meeting the needs of the maneuver commander. For the direct support artillery battalion to provide responsive fires it must have firing units in position, ready to answer calls for fire.<sup>43</sup> The key to positioning is proper location and timely occupations.

Field artillery doctrine emphasizes many considerations governing movement and occupations including survivability, communications, and easing the transition to future operations. However, the supported unit's mission and tactical situation provide the main impetus for movement planning. According to current doctrine, the crucial ingredient for a successful move, whether it is by section, battery, or battalion, is ground reconnaissance of the route and preparation of the future position.<sup>44</sup> This doctrine is a holdover from the artillery's need to survey and establish

directional control for each battery in every position. This emphasis on deliberate reconnaissance is inadequate for heavy forces conducting operations in the current battlefield environment and unnecessary given existing positioning systems.

In 70 percent of the missions analyzed, artillery units were unsuccessful in providing responsive fires after their initial displacements during both offensive and defensive operations. Unsuccessful units relied on detailed route reconnaissance and position preparation. Day/night occupations and ready to fire times averaged seventy-two minutes. Successful units averaged fifteen minute occupation and ready-to-fire times without conducting anything other than a map reconnaissance.<sup>45</sup> Successful units were trained to conduct, routinely, doctrinal hasty occupations.

Current doctrine says that these hasty occupations should not be the norm.<sup>46</sup> However, artillery battalions in direct support of heavy brigades, involved in force projection operations, will normally conduct hasty occupations. Hasty occupations are the key to delivering those critical, responsive, close support fires. Artillery units that train doctrinally, for occupations of prepared positions, are executing inappropriate procedures. Empirical evidence proves that there is a doctrine-reality mismatch. Units that consistently execute doctrinal hasty occupations as the rule, rather than the exception, will

succeed in providing responsive indirect fires to the combined arms commander.<sup>47</sup>

### Command and Control

Effective command and control must ensure synchronization of the supply side of the indirect fire support system before integration of close support indirect fires with maneuver. Direct support artillery battalion command and control elements translate the combined arms commander's intent into the technical and tactical actions needed for the responsive, integrated attack of indirect targets.<sup>48</sup> Key members of this command and control system include the direct support artillery battalion commander/fire support coordinator, brigade fire support officer, direct support artillery battalion operations officer, and fire direction officer.

Organizationally, the fire direction officer, and the artillery battalion operation officer's location is the direct support artillery battalion tactical operations center. These key personnel are the staff officers accountable for ensuring that the direct support artillery battalion is technically and tactically able to execute the combined arms commander's battle plan. Under the decide, detect, deliver methodology, they are responsible for the delivery element. Like the organization for observers, this structure presents a doctrinal-organizational dilemma.

According to FM 6-20-1, The Field Artillery Cannon Battalion, the direct support artillery battalion fire

direction officer provides timely and effective tactical and technical fire control in support of operations.<sup>49</sup>

Specifically, the fire direction officer is responsible for ensuring the application of the commander's attack guidance to all fire missions, and the execution of those missions, in the priority established by the combined arms commander. The direct support artillery battalion fire direction officer is the primary agent used by the brigade fire support officer in the development and execution of the indirect fire support plan.

Alternately, the direct support artillery battalion operations officer is responsible for the preparation of the field artillery support plan and timely positioning of battalion firing elements. The fire support plan contains information necessary for understanding how field artillery units will move, position, and manage ammunition in support of the combined arms commander's intent and concept.<sup>50</sup> The fire direction officer is co-located and supervised by the artillery battalion operations officer. Significantly, the artillery operations officer is not explicitly responsible for ensuring that the indirect fire support plan is executed according to the combined arms commander's intent. His efforts focus on the readiness and availability of the direct support artillery battalion.<sup>51</sup> It is instead, the brigade fire support officer's primary duty to assist the fire support coordinator in the development and execution of an indirect fire support plan that accomplishes the combined arms commander's intent for indirect fires.<sup>52</sup>



By doctrinal-organizational default, supervision of the direct support artillery battalion fire direction officer becomes the responsibility of the brigade fire support officer. During the planning phase of the indirect fire support plan, the brigade fire support officer, at the maneuver brigade tactical operations center, and artillery battalion fire direction officer, at the artillery battalion tactical operations center, communicate via FM radio and TACFIRE (computer system designed to perform technical and tactical indirect fire control and direction). This structure is also in place during execution of the indirect fire support plan. An obvious doctrinal-organizational dilemma results. The brigade fire support officer, responsible for the development and execution of the indirect fire support plan, is not co-located with the primary personnel and equipment necessary for successful planning and execution. Moreover, the direct support artillery battalion operations officer, who is not involved in the development of the indirect fire support plan, is co-located with the fire direction officer.<sup>53</sup>

This doctrinal-organizational disconnect degrades the brigade fire support officer's ability to supervise the fire direction officer and ensure the execution of the combined arms commander's intent for indirect fires. This doctrinal-organizational dilemma must be corrected for the indirect fire support command, control, and communication system to synchronize the supply side of indirect fire support and provide effective, close support, indirect

fires. Concurrent with identified problems on the supply side of the system that inhibit integration of indirect fires with maneuver, is a more elemental problem; training of maneuver officers to be combined arms commanders.

#### Heavy Brigade Fire Support System, Demand Side

##### Training, Leader Development and Doctrine

Maneuver combat arms officers, armor, infantry, aviation, unlike artillery officers, have the opportunity and must accept the challenge to become combined arms commanders. According to Brigadier General Wass de Czege (RET), former assistant division commander (maneuver), 1st Infantry Division:

"Maneuver commanders dominate the demand side of the fire support equation, but today they orient primarily on the potent killing effects of their tanks and infantry fighting vehicles and often resort to indirect fires as an afterthought. . . . Many heavy maneuver commanders generally overlook the important role of fire support in reinforcing and complementing the effects of their direct fires to produce effects that are not merely additive but can be powerfully multiplicative."<sup>54</sup>

This observation is confirmed consistently at the NTC. A deliberate attack conducted at brigade level during rotation 93-11 resulted in the following after action review comment:

The plan focused solely on the scheme of maneuver. The BDE disregarded doctrinal considerations of mass, synchronization of indirect fires, and actions on contact. Instead, the BDE hurried through the orders process, selecting to be satisfied with a 70-percent solution focusing only on how to defeat the enemy through direct fire and maneuver. Indirect fires were planned as an afterthought and were not integrated with the scheme of maneuver.<sup>55</sup>

This comment is typical of most brigade operations conducted at the NTC. Moreover, it reflects a lack of improvement of brigades to integrate fires with maneuver over the past five years. This after action review comment from rotation 90-1 demonstrates the inability to correct an obvious long-term deficiency:

The brigade developed a scheme of maneuver and a scheme for indirect fires. Each system was synchronized internally but not integrated into a battle plan. Maneuver and indirect fire elements conducted operations in isolation.<sup>56</sup>

Army doctrine says that fires cannot be separated from maneuver. According to FM 100-5, "Army forces maneuver to bring firepower on the enemy, and bring fire power on the enemy in order to maneuver."<sup>57</sup> Critical to the successful integration of close support indirect fires with maneuver is the training of maneuver officers to be combined arms commanders and artillery officers to understand maneuver doctrine. Moreover, successful integration relies on the correct use and design of doctrinal tools that link the demand and supply side of the indirect fire support system. This linkage tool is the commander's intent, translated into the concept of the operation, found in the U.S. Army's five paragraph operations order, using the doctrinal course of action development methodology.<sup>58</sup>

The combined arms commander's intent is the primary tool for ensuring the integration of indirect fires with maneuver. At each level, the fire support coordinator and fire support officer, plan close support indirect fires as

the commander outlines his scheme of maneuver. They must know when and where the commander wants fire support. They must also understand what the commander wants in the way of effects, duration, and timing. To truly understand the commander's intent, they must know why the commander wants support. Alternately, the combined arms commander must understand what effects indirect fires can create and how those fires can create the conditions for success in the close fight. The fire support coordinator and fire support officer must seek and understand the commander's guidance and intent and be prepared to recommend the integration of available fire support.<sup>59</sup>

Analysis of the NTC research material shows that maneuver commanders and artillerymen do not receive the necessary training in the correct use of the doctrinal tools designed to facilitate the integration of indirect fires with maneuver. This results in officers who are neither combined arms commanders nor effective integrators of indirect fires. Several factors combine to inhibit this successful integration. Parochial institutional training of fire supporters and maneuver officers results in officers who are unable to translate successfully the commander's intent into a holistic concept of the operation. Moreover, the flawed doctrinal designs of the course of action development methodology, and the concept of the operation in the five paragraph operations order inhibit successful integration.

FM 101-5, Command and Control for Commanders and Staff (Final Draft) defines and describes the use of the commander's intent as:

" . . . the cornerstone of mission tactics. Subordinates use intent to guide their actions when they must act without additional instructions, directives, orders, or guidance. The intent includes the commander's purpose, method, and endstate for the mission."<sup>60</sup>

The concept of the operation is the translation of the commander's intent into where, when, and how the commander wants to concentrate his combat power.<sup>61</sup> Doctrinally, the concept of the operation addresses the battlefield operating systems by element, herein lays the dilemma.

During course of action development and selection, which leads ultimately to the concept of the operation, maneuver commanders and their fire support officers work essentially in isolation. After receipt of the commander's intent the brigade operations officer begins course of action development. Each course of action developed by the operations officer starts with the scheme of maneuver. Doctrine says that the operations officer will develop a scheme of maneuver that will accomplish the commander's intent. It is expressed in terms of how to defeat the enemy or accomplish the mission solely through maneuver, without considering the effects of close support indirect fires.<sup>62</sup>

Under current doctrine, the fire support officer begins planning for indirect fires upon receipt and analysis of the brigade mission. In practice, the fire support

officer waits until completion of a proposed course of action before he begins planing the integration of indirect fires with maneuver. This method is used in an attempt to ensure that the commander's intent is met.<sup>63</sup> In reality it often produces an incomplete and disjointed fire support plan. The structure of the written portion of paragraph 3 of the operations order, concept of the operation, reinforces this flawed doctrine. The concept of the operation paragraph 3.a., addresses the scheme of maneuver and indirect fires in separate sub-paragraphs.<sup>64</sup> Development of concepts of operation using this doctrine only ensures the integration of direct fires with maneuver. Moreover, this doctrine ensures that indirect close support fires will only be considered after the commander has attempted to determine how to accomplish the mission using only maneuver and direct fire weapons. This doctrine is flawed and ignores the Army's doctrinal precept that fires and maneuver cannot be separated. While the doctrinal tools used to ensure integration of close support indirect fires with maneuver are flawed, the institutional training U.S. Army officers receive in the use of those tools is also deficient.

U.S. Army officers attend various institutional training courses commensurate with their level of experience. Entry level branch specific training consists of basic courses designed to teach officers the basics of their respective branches. Of the three basic courses examined, only the artillery basic course includes

instruction on the synchronization of fires with maneuver.<sup>65</sup> Because artillery lieutenant's initial duty may be as a company fire support officer, they must possess fundamental skills in close support indirect fire integration. Of the sixty-four hours spent on indirect fire support instruction at the field artillery officer basic course, only four focus on the training of techniques for the integration of indirect fires with maneuver.<sup>66</sup> The first course that addresses synchronization of battlefield operating systems, is the officer advanced course, attended by company grade officers before assuming command of companies, troops, and batteries.

Analysis of terminal learning objectives and course material at the infantry, armor, and artillery officer advanced courses reveals a lack of emphasis on the development of skills needed to ensure integration of indirect fires with maneuver. At the Armor Officer Advanced Course, students receive 764 hours of instruction. Of this total, 428 hours deal with the development and application of tactical, company grade officer skills, the remainder involves administrative skills required of commanders at the company level. Moreover, only three percent of the hours dedicated to development of tactical skills address specific skills designed to integrate supporting battlefield operating systems. Only two hours of instruction are set aside for the specific purpose of teaching students how to integrate close support indirect fires with maneuver.<sup>67</sup>

Advanced course student officers have the

opportunity to integrate indirect fires with maneuver while they plan and execute many practical exercises. However, development of the necessary doctrine integration skills receives little attention.<sup>68</sup> The infantry officer advanced course structure is similar to the armor advanced course and does no better at developing combined arms officers.<sup>69</sup> Student officers graduate with the fundamental skills required of maneuver officers. Neither course focuses on the development of combined arms officers. Fort Sill's Artillery Officer Advanced Course does no better in preparing artillerymen to understand the complexities of maneuver or develop the skills required for integration of indirect fires with maneuver.

Student officers at the artillery officer advanced course receive 764 hours of instruction. Fire support topics take up 368 of these hours, with the remainder devoted to administrative topics. Instruction focused on understanding the doctrine of maneuver forces is limited to only thirteen hours.<sup>70</sup> In an attempt to correct this problem the field artillery school issues a one page student handout stressing the importance of the maneuver commander's intent. This handout also attempts to establish the doctrine on how to write the indirect fires subparagraph of an operations order.<sup>71</sup>

Artillery officer advanced course graduates understand the technical requirements of indirect fire employment. However, they lack the doctrinally required skills necessary to understand the maneuver commander's



scheme of maneuver and advise him on how to integrate indirect fires with maneuver. This institutional training problem persists above the advance course level of instruction.

Maneuver and artillery officers attend three other institutional officer training courses. First, while at the company grade level, officers attend the Combined Arms and Services Staff College (CAS<sup>3</sup>), designed to develop officers to function as staff officers. Officers receive no training in warfighting skills at CAS.<sup>72</sup>

Second, officers attend the Command and General Staff College (CGSC), as Majors or promotable Captains. Student officers have the opportunity to practice and develop tactical skills at CGSC. However, the only course designed to teach students integration of indirect fires with maneuver is an elective. Officers who have a Functional Area coded, "54" (Operations, Plans, and Training) must take this "Advanced Fires," elective course. Maneuver and artillery officers who are not Functional Area 54, yet may become maneuver and artillery battalion operations officers, do not receive this training. This results in a significant number of potential battalion operations officers and commanders whose only institutional training on how to integrate indirect fires with maneuver is limited to that received at their advanced course.<sup>73</sup>

Third, officers attend either a battalion or brigade level Tactical Commanders Development Course. Officers attend this course after selection to command at the

battalion or brigade level. These courses are three weeks long and provide an opportunity for future commanders to develop combat integration skills, mainly through simulations. Again, this course is limited in scope and duration. The Tactical Commanders Development Course does not focus exclusively on integration of indirect fires with maneuver, it emphasizes a holistic integration of the battlefield operating systems.<sup>74</sup>

One is left with the conclusion that the institutional training received by officers at the field grade level is not adequate to develop combined arms commanders or artillerymen who are proficient in the use and translation of the commander's intent into an integrated concept of operation. Until the flaws in the doctrinal tools and the deficiencies inherent in institutional training are corrected, integration of indirect fires with maneuver will remain inhibited.

#### Conclusion and Recommendations

Integration of close support indirect fires, critical to the success of the heavy brigade in a force projection environment, remains an elusive goal. This study of the heavy brigade indirect fire support system identified five weaknesses inherent in the system. These weaknesses included doctrinal, organizational, training, and leader development issues.

First, a disconnect exists between the direct support artillery unit's movement and occupation doctrine

and the expected operational environment of the heavy brigade. This dilemma has an obvious solution. Redesigning artillery movement and occupation doctrine to reflect the heavy brigade operational environment, with hasty occupations being the norm, will increase responsiveness of indirect fires. Research shows that units that train to conduct movement and occupations on a fluid, non-linear battlefield can provide responsive indirect fires to the heavy brigade.

Second, a redesign of the heavy brigade target acquisition observer structure is necessary to align organization with doctrine. Control over the "eyes" of the heavy brigade requires centralization. Current observer organization decentralizes control and position of most of the brigade's target acquisition assets at the company and task force level. This organization provides for decentralized execution of close support indirect fire plans. It does not, however, provide the brigade commander the control needed to take advantage of unanticipated opportunities or create the conditions for successful maneuver of direct fire weapons. By substituting infantry company forward observers in heavy brigades for combat observation lasing teams, brigade commanders would gain control of the "eyes" they require to integrate effectively indirect fires with maneuver. This reorganization would provide the brigade commander the capability to execute the brigade indirect fire plan in a decentralized manner, yet allows for the centralized control needed to exploit

opportunities. (See Appendix C for a proposed heavy brigade observer organization).

Third, the command, control, and communication organizational design of the direct support artillery battalion is flawed. The current artillery battalion command, control, and communication organization has the fire direction officer located with the artillery battalion operations officer in the direct support artillery battalion tactical operations center. Moving the fire direction officer and computer to the brigade tactical operations center would enhance integration of indirect fires with maneuver. This organizational structure change would allow the brigade fire support officer to exercise direct physical supervision over the fire direction officer. Doctrine calls for the brigade fire support officer, not the direct support artillery battalion operations officer, to plan, integrate, and execute the indirect fire plan through the fire direction officer and the TACFIRE computer. Moving the physical location of the fire direction officer and artillery battalion fire direction center will ensure execution of the close support indirect fire plan according to the brigade commander's intent.

Fourth, maneuver combat arms officers training is not producing combined arms commanders and artillerymen are not receiving the training necessary to understand maneuver doctrine. Correction of this problem requires that the Training and Doctrine Command, develop a common institutional training strategy for maneuver and artillery

officers. This strategy must focus on the development of maneuver combat arms officers as combined arms officers and artillerymen who understand maneuver doctrine and how to integrate indirect fires with maneuver.

Fifth, the redesign of the doctrinal tools intended to translate the commander's intent into a concept of operation and ensure integration of indirect fires with maneuver is necessary. Current methods of developing concepts of operation, according to the commander's intent, work against the successful integration of indirect fires with maneuver. Use of the present methodology ensures that commanders, maneuver operations officers, and their fire supporters design operations that separate indirect fires from maneuver. Instead of ensuring that concepts of operation integrate indirect fires and maneuver, the design of these doctrinal tools ensures that commanders fight a maneuver battle and an indirect fire battle. Correcting this problem requires teaching maneuver officers to develop concepts of operation that include the planned effects of close support indirect fires. Moreover, it is necessary to redesign the doctrinal fire support integration tools, course of action development, and format of the operations order.

Course of action development cannot focus on how to defeat the enemy through maneuver in isolation from indirect fires. This directly contradicts the doctrinal tenet that fires cannot be separated from maneuver. Additionally, commanders must develop one commander's intent on how to

defeat the enemy, not one for maneuver and one for indirect fires. Staffs must then translate that intent into one concept of the operation paragraph that incorporates both indirect fires and maneuver. Eliminating the separate indirect fires subparagraph from the operations order will force commanders to take a holistic view of available combat power and integrate indirect fires with maneuver.

Finally, integration of close support indirect fires with maneuver is critical if the heavy brigade is to fight, survive, and win in the expected operational environment. Many inherent weaknesses exist in the current heavy brigade indirect fire support system that inhibit the commander's ability to integrate indirect fires with maneuver. Correcting the organizational weaknesses identified in this study will require implementing only minor changes in existing structure or doctrine. The greater challenge is to redesign the institutional training and doctrinal fire support integration tools that lead to the development of maneuver, rather than combined arms officers. Meeting this challenge is crucial for ensuring the success of the heavy brigade on the future battlefield.

## ENDNOTES

1. U.S. Army, Field Manual 6-20, Fire Support in the AirLand Battle (Washington, D.C.: U.S. Government Printing Office, 1988), p. 1-2.
2. Brigadier General Carter, "Synchronizing Combat Power at the NTC," Field Artillery Journal (August 1992): p. 5-9.
3. FM 6-20 p. 1-2.
4. FM 6-20 p. 1-2.
5. Brigadier General Huba Wass de Czege and Lieutenant Colonel Michael V. Cuff, "Improving the Demand Side of Fire Support" Military Review (November 1993): p. 41-53.
6. U.S. Army, Field Manual 71-3, Armored and Mechanized Infantry Brigade (Washington, D.C.: U.S. Government Printing Office, 1988), p. 2-5.
7. U.S. Army, Field Manual 100-5, Operations (Washington, D.C.: U.S. Government Printing Office, 1993), p. 6-14.
8. FM 6-20, p. 2-8.
9. U.S. Army, Field Manual 71-100, Division Operations (Washington, D.C.: U.S. Government Printing Office, 1990), p. 2-2.
10. FM 100-5, p. 6-14 through 6-15.
11. U.S. Army, Field Manual 100-15, Corps Operations (Initial Draft) (Washington, D.C.: Government Printing Office, 1994), p. 5-39.
12. FM 100-15, p. 5-39 through 5-42.
13. FM 71-100, p. 4-4 through 4-6.
14. FM 71-3, p. 4-21 through 4-24.

15. FM 100-15, p. 5-39 through 5-43.
16. Ibid., p. 5-37.
17. FM 71-3 p. 4-11 through 4-18.
18. U.S. Army, Unofficial After Action Report of the 3-82 Field Artillery Battalion (1991), p. 1-57.
19. Ibid., p. 1-57.
20. U.S. Army, Unofficial After Action Report of the 2nd Brigade 1st Cavalry Division (1991), p. 47.
21. FM 71-3, p. 3-5.
22. FM 6-20, p. 2-8.
23. Ibid., p. 2-8.
24. FM 6-20, p. 1-2.
25. Ibid., p. 2-4 through 2-6.
26. Ibid., p. 2-7.
27. Ibid., p. 2-2 through 2-3.
28. U.S. Army, Field Manual 6-20-10, the Targeting Process (Washington, D.C.: U.S. Government Printing Office, 1990), p. 1-3 through 1-5.
29. U.S. Army, Field Manual 6-20-40, Fire Support for Brigade Operations (Heavy) (Washington, D.C.: U.S. Government Printing Office, 1990), p. 2-12 through 2-13.
30. Ibid., p. 2-1.
31. U.S. Army Field Artillery School, "White Paper: Clearance of Fires in the Close Fight" (Fort Sill, OK: Field Artillery School Student Handout; TV01CG HO4, 1993), p. 2.
32. U.S. Army Field Artillery School, "Close Support Study Group II, III, IV" (Fort Sill, OK: Field Artillery School, 1980, 1984, 1989).
33. RAND Corporation, Applying the National Training Center Experience: Artillery Targeting Accuracy (Santa Monica, CA: RAND Corporation, 1990), p. 42.
34. U.S. Army, Table of Organization and Allowances: SRC 06365L (3x8) (Washington D.C.: U.S. Government Printing Office, 1994).



35. FM 71-3, p. 3-2.
36. FM 71-3, p. 1-2 through 1-4.
37. U.S. Army CALL NTC Take Home Package, 93-09.
38. Ibid.
39. U.S. Army, Field Manual 71-2, The Tank and Mechanized Infantry Battalion Task Force, (Washington, D.C.: U.S. Government Printing Office, 1988), p. 3-56.
40. U.S. Army CALL NTC Take Home Package, 94-07.
41. U.S. Army CALL NTC Take Home Package, 94-07.
42. FM 71-3, p. 6-1 through 6-2.
43. U.S. Army, Field Manual 6-20-1, The Field Artillery Cannon Battalion (Washington, D.C.: U.S. Government Printing Office, 1990), p. 3-15 through 3-26.
44. Ibid., p. 3-17.
45. U.S. Army, Center for Army Lessons Learned (CALL), "National Training Center Take Home Packages: 90-1 through 94-7" (Fort Leavenworth, KS: U.S. Army Combined Arms Training Activity).
46. U.S. Army, Field Manual 6-50,
47. U.S. Army, CALL NTC Take Home Packages.
48. FM 6-20-40, p. 1-2.
49. FM 6-20-1, p. 3-2.
50. Ibid., p. 3-9.
51. Ibid., p. 3-4.
52. FM 6-20-40, p. 2-12.
53. FM 6-20-1, p. 3-4.
54. Wass de Czege, Military Review (November 1993), p. 44.
55. U.S. CALL NTC Take Home Package, 93-11.
56. U.S. CALL NTC Take Home Package, 90-01.
57. FM 100-5, p. 2-2.

58. U.S. Army, Field Manual 101-5: Command and Control for Commanders and Staff (Final Draft) (Washington, D.C.: U.S. Government Printing Office, 1993), p. H-1.
59. FM 6-20-40, p. 2-1.
60. FM 101-5, p. 4-18.
61. Ibid., p. 4-18.
62. Ibid., p. E-13.
63. U.S. Army CALL NTC Take Home Packages 90-1 through 94-07.
64. Ibid., p. H-55.
65. U.S. Army Field Artillery School, Fire Support and Combined Arms Operations Department, "Fire Support Instruction for the Artillery Officer Basic Course; Information Memorandum" (Fort Sill, OK: Field Artillery School, 1994).
66. Ibid.
67. U.S. Army Armor School, "Armor Officer Advanced Course: Course Summary" (Fort Knox, KY: Armor School, 1994).
68. Ibid.
69. U.S. Army Infantry School, "Infantry Officer Advanced Course: course Summary" (Fort Benning, GA: Infantry School, 1994).
70. U.S. Army Field Artillery School, "Field Artillery Officer Advance Course: Course Summary" (Fort Sill, OK: Field Artillery School, 1994).
71. U.S. Army Field Artillery School, Fire Support and Combined Arms Operations Department, "Fires Paragraph Tactics Technique and Procedure" (Fort Sill, OK: Field Artillery School, 1992).
72. U.S. Army Command and General Staff College, "CGSC Circular: No. 351-1, Catalog AY 1994-1995" (Fort Leavenworth, KS: Command and General Staff College, 1994), p. 97.
73. Ibid., p. 46.
74. Ibid., p. 107.

## BIBLIOGRAPHY

### BOOKS

Bailey, J.B.A., Field Artillery and Firepower, Oxford: The Military Press, 1989.

Bellamy, Chris, The Red God of War, London: Brassey's 1986.

Hogg, Ian V., Artillery 2000, London: Arms and Armour Press, 1990.

### MANUALS

Field Manual 6-20, Fire Support in the Airland Battle. Washington D.C.: U.S. Government Printing Office, 1988.

Field Manual 6-20-1, The Field Artillery Cannon Battalion. Washington D.C.: U.S. Government Printing Office, 1990.

Field Manual 6-20-10, The Targeting Process. Washington D.C.: U.S. Government Printing Office, 1990.

Field Manual 6-20-40, Fire Support for Brigade Operations (Heavy). Washington D.C.: U.S. Government Printing Office, 1990.

Field Manual 6-50, Tactics, Techniques, and Procedures for The Field Artillery Cannon Battery. Washington D.C.: U.S. Government Printing Office, 1990.

Field Manual 71-1, Tank and Mechanized Infantry Company Team. Washington D.C.: U.S. Government Printing Office, 1988.

Field Manual 71-2, The Tank and Mechanized Infantry Battalion Task Force. Washington D.C.: U.S. Government Printing Office, 1988.

Field Manual 71-3, Armored and Mechanized Infantry Brigade. Washington D.C.: U.S. Government Printing Office, 1988.

Field Manual 71-100, Division Operations. Washington D.C.: U.S. Government Printing Office, 1990.

Field Manual 100-5, Operations. Washington D.C.: U.S. Government Printing Office, 1993.

Field Manual 100-5-1, Operational Terms and Symbols (Initial Draft). Washington D.C.: U.S. Government Printing Office, 1994.

Field Manual 100-15, Corps Operations (Initial Draft). Washington D.C.: U.S. Government Printing Office, 1994.

Field Manual 101-5, Command and Control for Commanders and Staff (Final Draft). Washington D.C.: U.S. Government Printing Office, 1993.

#### GOVERNMENT DOCUMENTS AND STUDIES

Center for Army Lessons Learned, Corps - Division Lessons Learned. Fort Leavenworth, KS: U.S. Government Printing Office, 1990.

Center for Army Lessons Learned, Bulletin 94-1. Fort Leavenworth, KS: U.S. Government Printing Office, 1994.

Center for Army Lessons Learned, Fire Support for the Maneuver Commander. Fort Leavenworth, KS: U.S. Government Printing Office, 1990.

Center for Army Lessons Learned, "National Training Center Take Home Packages: 90-1 through 94-7." Fort Leavenworth, KS: Center for Army Lessons Learned, 1994.

RAND Corporation, Applying the National Training Center Experience: Artillery Targeting Accuracy. Santa Monica, CA: RAND Corporation, 1990.

The White House, A National Security Strategy of Engagement and Enlargement. Washington, D.C.: U.S. Government Printing Office, 1994.

- U.S. Army Automated Historical Archive System, "Operation Desert Storm Lessons Learned: VII Corps Artillery Commander's Report." Fort Leavenworth, KS: U.S. Government Printing Office, 1993.
- U.S. Army Command and General Staff College, CGSC Circular: No. 351-1, Catalog AY 1994-1995. Fort Leavenworth, KS: U.S. Government Printing Office, 1994.
- U.S. Army Field Artillery School, "Close Support Study Group II." Fort Sill, OK: Field Artillery School, 1980.
- U.S. Army Field Artillery School, "Close Support Study Group III." Fort Sill, OK: Field Artillery School, 1984.
- U.S. Army Field Artillery School, "Close Support Study Group IV." Fort Sill, OK: Field Artillery School, 1989.
- U.S. Army Field Artillery School, "Fires Paragraph Tactics, Technique, and Procedure." Fort Sill, OK: Field Artillery School Fire Support and Combined Arms Operations Department, 1992.
- U.S. Army Field Artillery School, "White Paper: Clearance of Fires in the Close Fight." Fort Sill, OK: Field Artillery School Student Handout; TV01CG HO4, 1993.
- U.S. Army, Unofficial After Action Review: 2nd Brigade, 1st Cavalry Division. Fort Hood, Texas: 1st Cavalry Division Museum, 1991.
- U.S. Army, Unofficial After Action Review: 3rd Battalion 82nd Field Artillery, 1st Cavalry Division. Fort Hood, Texas: 1st Cavalry Division Museum, 1991.
- U.S. Army, Table of Organization and Allowances: SRC 06365L (3x8). Washington D.C.: U.S. Government Printing Office, 1994.
- U.S. Government Accounting Office, Fire Support System: Status of the Fire Support Systems' Development. Washington, D.C.: U.S. Government Printing Office, 1986.
- U.S. Government Accounting Office, Fire Support System: Army's Plan to Improve Its Fire Support Capabilities. Washington, D.C.: U.S. Government Printing Office, 1986.

#### ARTICLES

Carter, Brigadier General. "Synchronizing "Combat Power at the NTC," Field Artillery Journal (August 1992): p.5-9.

Wass de Czege, Brigadier General and Lieutenant Colonel Michael V. Cuff. "Improving the Demand Side of Fire Support." Military Review (November 1993): p. 41-53.

#### UNPUBLISHED DISSERTATIONS, THESES, PAPERS

Brant, Bruce A. "Preparedness for Counterfire." Fort Leavenworth, KS: U.S. Army Command and General Staff College. MMAS Thesis. 1984.

Burn, Marion L, Major. "Maneuver Commander's Intent for Fire Support." Hohenfels, Germany: Combat Training Center, 1992.

House, Jonathan. "Toward Combined Arms Warfare: A Survey of 20th Century Tactics, Doctrine, and Organization." Fort Leavenworth, KS: U.S. Army Command and General Staff College. 1984.

#### OTHER SOURCES

U.S. Army Armor School, "Armor Officer Advanced Course: Course Summary; Information Memorandum." Fort Knox, KY: Armor School, 1994.

U.S. Army Infantry School, "Infantry Officer Advanced Course: Course Summary; Information Memorandum." Fort Benning, GA: Infantry School, 1994.

U.S. Army Field Artillery School Fire Support and Combined Arms Operations Department, "Fire Support Instruction for the Artillery Officer Advanced Course; Information Memorandum." Fort Sill, OK: Field Artillery School, 1994.

U.S. Army Field Artillery School Fire Support and Combined Arms Operations Department, "Fire Support Instruction for the Artillery Officer Basic Course; Information Memorandum." Fort Sill, OK: Field Artillery School, 1994.

## Appendix A

### Duty Descriptions of Critical Indirect Fire Support System Personnel

#### Combined Arms Commander

The combined arms commander is responsible for the operation. He states his intentions for indirect fires through his commander's intent and concept of the operation.

#### Direct Support Field Artillery Battalion Commander

The direct support DS FA battalion commander is the fire FSCoord for the supported brigade. As such, he is specifically responsible for all fire support planning and coordination for the maneuver brigade. The DS battalion commander brings, as his unique contribution to battle, his professional assessment of the current and near-term capabilities of his unit and of other fire support assets supporting the force.

#### Brigade Fire Support Officer

The brigade Fire Support Officer is the principal assistant to the FSCoord. He is a full-time liaison between the DS FA battalion and the maneuver brigade. He helps the maneuver brigade S3 integrate fire support into the maneuver commander's scheme of operation.

#### Battalion Fire Support Officer

The battalion Fire Support Officer's primary duty is to plan, coordinate, and execute fires to support the maneuver battalion commander's scheme of maneuver. In conjunction with the maneuver battalion S3 he writes and disseminates the fire support plan and fire support execution matrix.

### Artillery Battalion Operations Officer (S3)

The DS battalion S3 prepares the FA support plan and is responsible for ensuring that the plan is executed in concert with the maneuver plan. He continuously coordinates with the brigade FSO and the brigade S3 for position areas, movements, future operations, needs for additional fire support, and status of fire support systems.

### DS Artillery Battalion Fire Direction Officer (FDO)

The FDO is the person primarily responsible for supervising tactical and technical fire direction in the battalion. On the basis of guidance from the FSCoord and the S3, he decides where and how the battalion and any reinforcing units will fire.

### Combat Observation Lasing Team (COLT)

The COLT is an observer team designed to maximize the use of smart munitions. A COLT can be used with any munitions that requires reflected laser energy for final ballistic guidance. Within the heavy force structure, the team is composed of three soldiers equipped with a ground/vehicular laser locator designator (G/VLLD), and the necessary mobility and communications assets.

### Company Fire Support Officer (FIST)

The company FSO is the maneuver company FSCoord. As such, he integrates all fires to support the commander's scheme of maneuver. Although he is not the primary shooter for the infantry company, he is for the armor company. The FSO must be an expert at locating targets and adjusting fires.

### Company Forward Observers

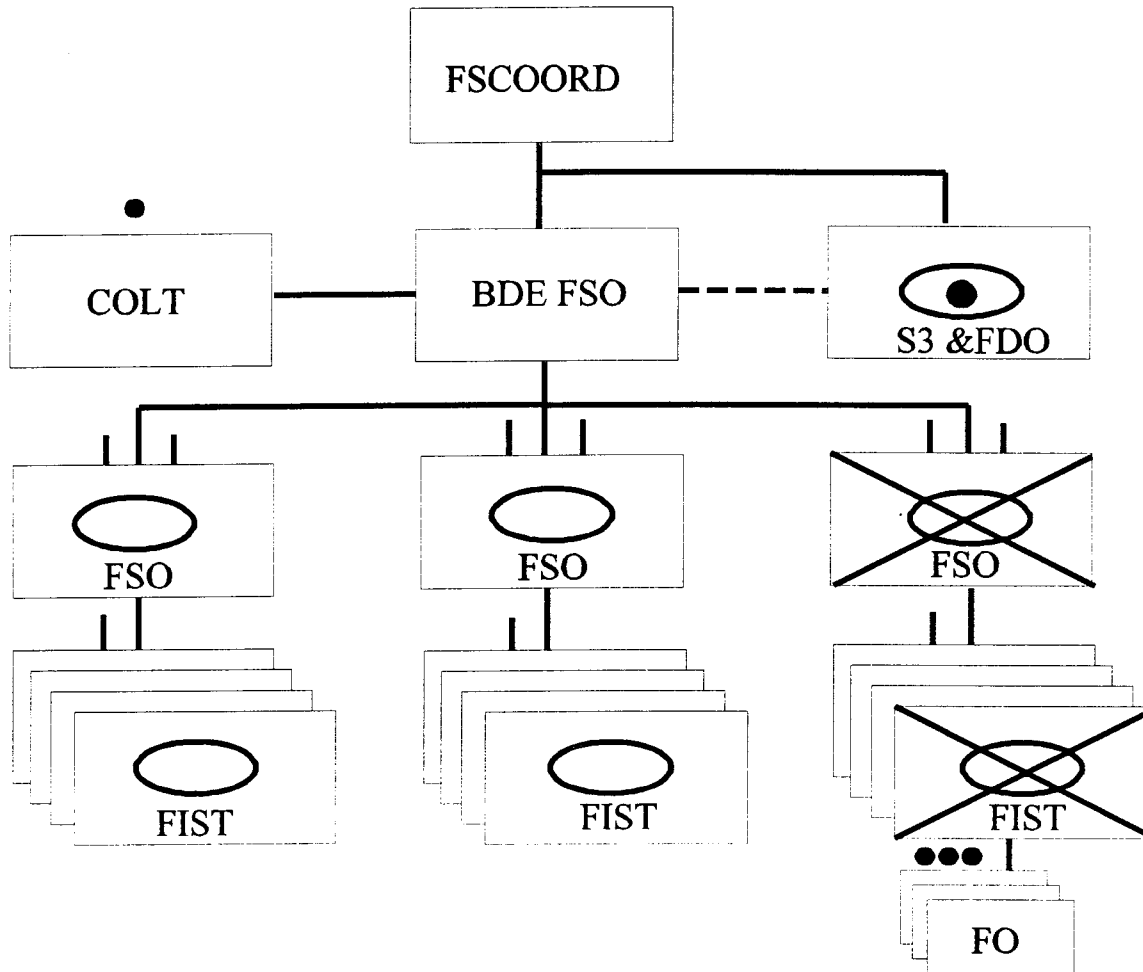
The forward observers are the primary shooters for the mechanized infantry company and are normally collocated with the maneuver platoon leaders. The company FSO must give the FOs enough information to ensure they understand how the fire support plan is to be integrated into the commander's scheme of maneuver.

Source: FM 6-20-40, Fire Support for Brigade Operations(Heavy) (Washington D.C.: Government Printing Office, 1990).



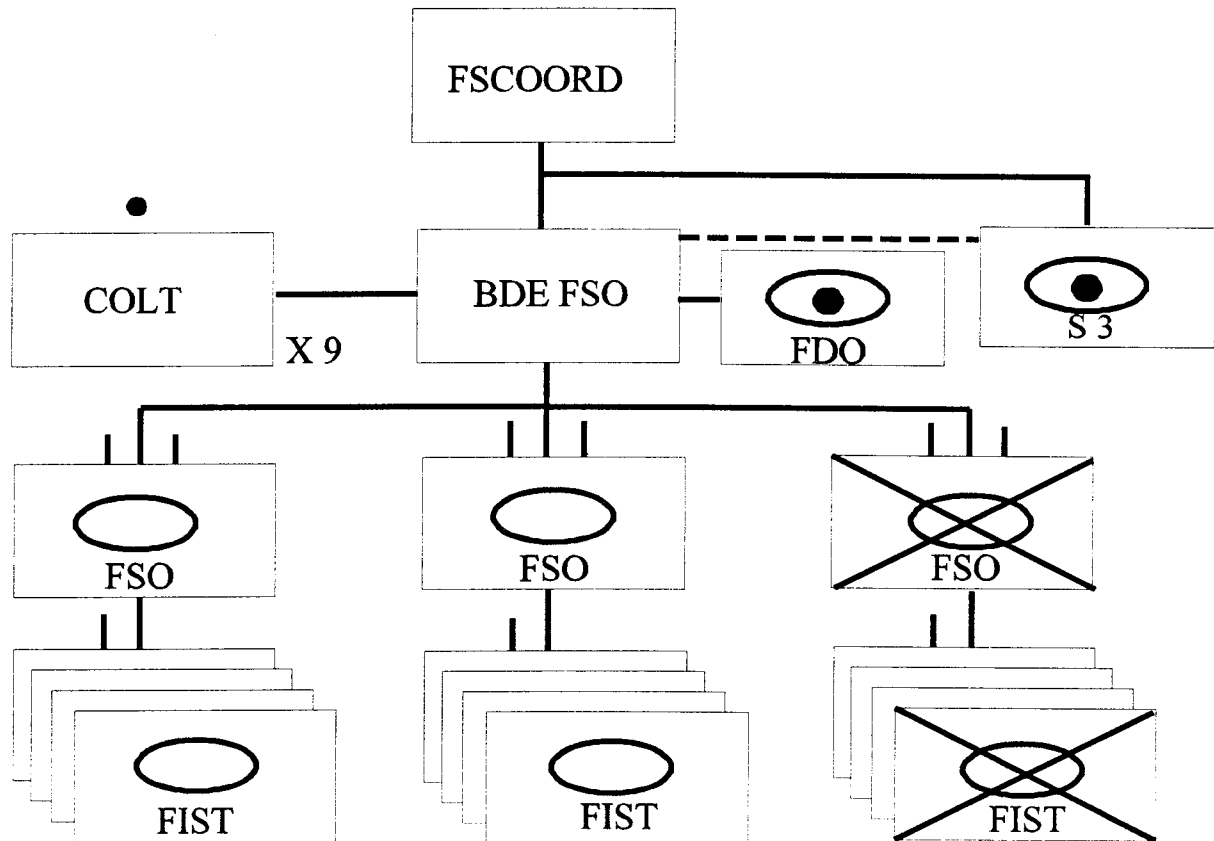
Appendix B

Heavy Brigade Fire Support System Structure



Source: FM 6-20-40, Fire Support For Brigade Operations (Heavy)  
(Washington D.C.: Government Printing Office, 1990).

Appendix C



INITIAL DISTRIBUTION LIST

1. Combined Arms Research Library  
U.S. Army Command and General Staff College  
Fort Leavenworth, KS 66027-6900
2. Defense Technical Information Center  
Cameron Station  
Alexandria, VA 22314
3. Dr. Richard M. Swain  
U.S. Army Command and General Staff College  
School of Advanced Military Studies  
Fort Leavenworth, KS 66027-6900